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ABSTRACT

This guide is for Neighborhood Networks center staff and volunteers who want to learn how centers across the country are helping adults meet work force demands. It provides resources to work force development programs so examples can be tailored to meet the needs of other communities. It focuses on challenges that integrating academics and job skills development presents, while posing some new solutions. Section 1 addresses Issue 1: Teaching basic workplace skills and competencies. Focus is on the basic competencies, skills, and qualities required by all young people to meet the demands of America's workplaces by the Secretary's Commission on Achieving Necessary Skills (SCANS). It covers putting SCANS to work; SCANS five competencies; SCANS three-part foundation; and integrating SCANS into training. Section 2 addresses Issue 2: Assessing training programs that meet employer needs. Section 3 discusses Issue 3: Helping residents become marketable in the workplace. Section 4 is on Issue 4: Creating projects that stimulate people to move beyond. Appendixes contain a sample information technology skill standards learner progress chart; annotated list of 9 resource organizations, 3 publications, and 4 Web sites; and industry, contact information, and name of 3 Building Linkages Projects and 22 National Skills Standards Projects. (YLB)

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ENGAGING EDUCATION: INTEGRATING WORK, TECHNOLOGY AND LEARNING FOR ADULTS

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This publication was developed by the U.S. Department of Housing and Urban Development to assist in the planning and development of Neighborhood Networks centers.

The guides in this series offer "how to" information on starting up a center, creating programs and identifying center partners; center and program profiles and a wealth of resources.

Neighborhood Networks is a community-based initiative established by the U.S. Department of Housing and Urban Development (HUD) in 1995. Since then, hundreds of centers have opened throughout the United States. These centers provide residents of HUD-assisted and/or -insured properties with programs, activities and training promoting economic self-sufficiency. These guides contain examples of successful center initiatives and how you can replicate them.

To receive copies of this publication or any others in the series, contact:

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All publications are available from the Neighborhood Networks website at:

www.neighborhoodnetworks.org

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Engaging Education: Integrating Work, Technology and Learning for Adults

Introduction

A Neighborhood Networks center is a likely place for young and older adults to focus on career development. It is where youth can discover career choices and focus on career learning. Women re-entering the workforce can learn how to "package" life experience for academic credit and prepare for employment. At Neighborhood Networks centers, adults who have lost their jobs or adults who are looking for jobs for the first time can find and develop new skills.

Within a system of supportive services such as child care, health care, transportation and career preparation, Neighborhood Networks centers open doors of opportunity to the information age for all residents.

Along with this great new adventure come challenges to Neighborhood Networks directors and staff in preparing people for transition to work.

How should learning be organized to help participants make a rapid and effective transition to work? How can the computer skills learned at the centers be seen as job training skills and used to help residents market themselves in an information age?

This guide is for Neighborhood Networks center staff and volunteers who want to learn how centers across the country are helping adults meet workforce demands. It provides resources to workforce development programs so examples can be tailored to meet the needs of other communities.

Putting Learning in Context: Integrating Academics and Job Skills to Add Value to Work

Since the mid-1980s, research and practice in education and workplace reform have revealed the benefits of integrating academics with job skills development. One of the findings was that well-designed learning experiences treat participants as active learners engaged in solving real life workplace problems.

Contextualized learning integrates academic learning with job skill development, thereby applying what has been learned in school to solve real on-the-job situations. It requires the integration of education, technical skills, knowledge and interpersonal skills and provides concrete applications of abstract concepts, particularly among individuals developing literacy and academic skills.

Contextual Learning Example

The San Diego Housing Commission teamed with Casa Familiar, a local nonprofit organization, to increase access to computers, training and jobs for youth in San Ysidro, a low-income community of 34,000 with no high school or major employers. The project encourages youth to master word processing, spreadsheet and other software skills in a class designed to mirror the realities of the workplace. Homeless and immigrant youth in two training groups develop initial agreements that establish workplace expectations and the stipend for completing work.

The class is called an internship and leaders are called supervisors rather than teachers. The work is reviewed at weekly supervisory meetings and in mid-point and semester-end performance reviews. Learning projects involve publishing creative writing, creating personal budgets, job searches and other relevant work in which computer skills are used.

While posing some new solutions, the opportunity to integrate academics and job skills development also presents challenges in four key issues:

- **Issue 1**: Teaching basic workplace skills and competencies
- **Issue 2**: Assessing the training programs that meet employer needs

- **Issue 3**: Helping residents become more marketable in the workplace by parlaying new computer skills into employment
- **Issue 4**: Creating projects that stimulate people to move beyond what they think they can achieve

Issue 1: Teaching Basic Workplace Skills and Competencies

What are the fundamental skills and competencies needed in the workplace? Do we wait until learners have reached a certain basic skills level before placing them in job skills development? How literate do people need to be to succeed at work? How much English do people need to participate in computer-based education and training? Can we develop a fast track to good jobs by integrating academic learning with job skill development?

When are Neighborhood Networks program participants ready for job training?

Many participants in literacy programs cannot wait for an extended period of time before they get a job. In addition, work requirements imposed by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 make it even more difficult to participate in course work that requires a lot of time before completion.

The SCANS Response

In 1991, the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) identified basic competencies, skills and qualities required by all young people to meet the demands of America's workplaces. A broad base of support for SCANS helped it become the foundation for work preparation programs in the United States.

Putting SCANS to Work

SCANS has been integrated into education and training curricula to help learners get on a fast track to work by developing basic employability skills.

The National Skill Standards Board supports the concept of certifying employability skills, such as teamwork, problem solving and decision making. The National Institute for Literacy uses similar skills to define what adults need to know to carry out their life roles successfully and school systems at the state and local level, as well as community colleges, are integrating SCANS skills into their curricula.

An example of this certification program is Oregon's Educational Act for the 21st Century. It requires all school districts by 2004-05 to provide students with an opportunity to achieve the Certificate of Advanced Mastery. This certificate program defines career-related learning standards focusing on personal management, problem solving, teamwork, communication, organizations and systems, employment foundations and career development. Students are expected to achieve this through integrated curricula and community-based experiences.

SCANS – Five Competencies

1. **Resources:** Identifies, organizes, plans and allocates resources
   - ❑ *Time* - Selects goal-relevant activities, ranks them, allocates times, and prepares and follows schedules
   - ❑ *Money* - Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives
   - ❑ *Material and facilities* - Acquires, stores, allocates and uses materials or space efficiently
   - ❑ *Human resources* – Assesses skills and distributes work accordingly, evaluates performance and provides feedback
2. **Interpersonal:** Works with others
   - ❑ *Participates as a member of a team* - contributes to group effort
   - ❑ *Teachers others new skills*
   - ❑ *Serves clients/customers* - works to satisfy customers' expectations
   - ❑ *Exercises leadership* - communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
   - ❑ *Negotiates* - works toward agreements involving exchange of resources, resolves divergent interests
   - ❑ *Works with diversity* – works well with men and women from diverse backgrounds
3. **Information:** Acquires and uses information
   - ❑ *Acquires and evaluates information*
   - ❑ *Organizes and maintains information*
   - ❑ *Interprets and communicates information*
   - ❑ *Uses computers to process information*
4. **Systems:** Understand complex inter-relationships
   - ❑ *Understands systems* - knows how social, organizational, and technological systems work and operates effectively with them
   - ❑ *Monitors and corrects performance* - distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
   - ❑ *Improves or designs systems* - Suggests modifications to existing systems and develops new or alternative systems to improve performance
5. **Technology:** Works with a variety of technologies
   - ❑ *Selects technology* – chooses procedures, tools or equipment including computers and related technologies.
   - ❑ *Applies technology to task* - Understands overall intent and proper procedures for setup and operation of equipment
   - ❑ *Maintains and troubleshoots equipment* - Prevents, identifies or solves problems with equipment, including computers and other technologies

(DOL, 1991)

SCANS - A Three-Part Foundation

1. **Basic Skills**: Reads, writes, performs arithmetic and mathematical operations, listens and speaks
   - ❑ ***Reading*** – locates, understands and interprets written information in prose and in documents such as manuals, graphs and schedules
   - ❑ ***Writing*** - communicates thoughts, ideas, information and messages in writing; and creates documents such as letters, directions, manuals reports, graphs and flow charts
   - ❑ ***Arithmetic/Mathematics*** - performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
   - ❑ ***Listening*** - receives, attends to, interprets and responds to verbal messages and other cues
   - ❑ ***Speaking*** - organizes ideas and communicates orally
2. **Thinking Skills**: Thinks creatively, makes decisions, solve problems, visualizes, knows how to learn and reasons
   - ❑ ***Creative thinking*** - generates new ideas
   - ❑ ***Decision making*** - specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
   - ❑ ***Problem solving*** - recognizes problems and devises and implements plan of action
   - ❑ ***Seeing things in the mind's eye*** - organizes, and processes symbols, pictures, graphs, objects and other information
   - ❑ ***Knowing how to learn*** - uses efficient learning techniques to acquire and apply new knowledge and skills
   - ❑ ***Reasoning*** – discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem
3. **Personal Qualities**: Displays responsibility, self-esteem, sociability, self-management and integrity and honesty
   - ❑ ***Responsibility*** - exerts a high level of effort and perseveres towards goal attainment
   - ❑ ***Self-esteem*** - believes in own self-worth and maintains a positive view of self
   - ❑ ***Sociability*** - demonstrates understanding, friendliness, adaptability, empathy and politeness in group settings
   - ❑ ***Self-management*** - assesses self accurately, sets personal goals, monitors progress and exhibits self-control
   - ❑ ***Integrity/honesty*** - chooses ethical courses of action

(DOL, 1991)

Integrating SCANS Into Training

The following steps can be helpful to Neighborhood Networks centers that want to integrate SCANS into training programs.

- ❑ Develop a simple checklist and assess participant skills and knowledge related to SCANS skills. Initial screening can be conducted during class discussions by asking participants to provide examples of how they have demonstrated these skills in the past and which skills have been most challenging for them to develop.
- ❑ Develop an Individualized Learning Plan. After an informal assessment, have each participant complete the plan, identifying specific SCANS skills to be developed throughout the training. The plan should include a section where participants can self-assess their progress throughout the training program.
- ❑ Develop a chart that integrates SCANS with existing training curricula. Identify which SCANS skills are strongly represented in your curricula, which SCANS skills need to be included more and which are missing.
- ❑ Add activities to include missing and underrepresented SCANS skills. Create opportunities for participants to practice SCANS as they develop technical and academic skills. An effective method for training in SCANS skills is to present workplace problems to be solved, by providing case studies and examples drawn from the workplace experiences of participants.
- ❑ Include instructional strategies that encourage participants to practice specific SCANS skills. This can occur as participants are discussing employment, practicing technical skills, performing tasks, preparing for interviews and internships, and debriefing from work site experiences.
- ❑ Ask participants to report their progress in developing SCANS skills. Use your assessment checklist to measure progress.
- ❑ Once you have a bank of SCANS-related activities and instructional strategies, customize your training to meet the needs of participants.

Many commercial curriculum and assessment products are available to help educators and trainers assess participants in SCANS skills. A good resource is the SCANS/2000 Workforce Skills Website at Johns Hopkins University (http://infinia.wpmc.jhu.edu).

Issue 2: Assessing Training Programs That Meet Employer Needs

Knowing how to develop skills training programs that meet the needs and standards of industry and employers and how to integrate those standards into education and training courses to prepare people for work can be useful to Neighborhood Networks staff in identifying job skills training programs and selecting curricula.

These steps should be followed once a training program has been identified:

- ❑ Do a web search to locate skill standards for your program areas, starting with the National Skill Standards Board website at www.nssb.org. This website provides news, information about skill standards initiatives, new partnerships and links to projects and state skill standards activities.
- ❑ Using skills standards as a framework, talk to your local employers about what skills and knowledge they want from their employees.
- ❑ Work with local employers to identify the level of knowledge and skills required for entry level work.
- ❑ Monitor and record learner progress.
- ❑ Review progress frequently with learners and use progress reports in mock interviews.
- ❑ Include the list of foundation technical skills as a way to obtain feedback from supervisors once learners are placed on the job.

Issue 3: Helping Residents Become Marketable in the Workplace

Computer skills have become an essential basic skill of the information age and a marketable asset of people seeking employment.

Help Wanted 1998 reported 346,000 core-skill information technology positions unfilled in the United States.[1] The Bureau of Labor Statistics predicts that by the year 2000, 65 percent of the labor market will be required to possess high tech skills. Neil Evans, executive director of the Northwest Center for Emerging Technologies at Bellevue Community College near Seattle, WA, called this the tip of the iceberg. Evans said that nine technical workers are needed to support the work of every IT professional employed.

Technological advancement presents challenges to Neighborhood Networks centers, including how to:

- Channel various computer-based activities into a well-focused job skills development program that provides residents with new opportunities for high skill, high wage, high tech jobs; and
- Provide coordinated programs and support services to help residents develop the skills, knowledge and confidence needed to make a smooth transition into jobs requiring computer skills.

In addition, there are an incalculable number of jobs in almost all industries that require computer proficiency.

With industry partners, the Northwest Center for Emerging Technologies (NWCET) developed skill standards (criteria for what people must know and be able to do) for eight categories of information technology careers:

- Programming and Systems Analysis
- Software Engineering
- Database Management
- Networking
- Computer Operations
- Technical Support
- Multimedia
- Technical Writing

For short-term training programs, specialists at NWCET are creating modular, competency-based core curriculum based on these skill standards. The core curriculum modules can be used as building blocks to design customized information technology courses or short-term training programs to prepare people for jobs in local businesses and industries that require information technology skills.

Core Curriculum	
IT Skills/Knowledge	**Foundation Skills**
Computer trends in business and society	Analysis
Database	Design/development
E-mail	Documentation and business communication
Graphics software	Facilitation/customer service
Hardware installation and configuration	Organization/delivery of presentations
Internet	Problem-solving/troubleshooting
Network technologies	Project management
PC principles and operations	Research
Presentation software	Self-learning
Programming	Teamwork
Software installation and configuration	Testing/validation
Spreadsheet	Workplace skills
Windows	
Word processing	

Neighborhood Networks centers can use the core information technology standards to customize training and design short-term training programs.

Modules can be used as curriculum for short-term training or daylong workshops for students, parents and community members to explore information technology careers. Single modules used as just-in-time projects can meet the immediate needs of learners in drop-in centers. Modules can become supportive learning activities for the General Equivalency Degree, English for Speakers of Other Languages and other education programs that use the computer as a tool, such as the Internet module.

Making Skills Employer-Friendly

NWCET's implementation partner, Educational Development Center, Inc., (EDC) has developed tools to help Neighborhood Networks centers customize these standards and curriculum to local needs and train Neighborhood Networks center staff to design programs, use the curriculum modules, and record and report learner progress.

Presenting IT skill progress in the language recognized by employers places great value on the Progress Record Tool (Appendix A). Instructors can use this tool to record the skills and knowledge acquired by participants in the wide variety of computer-based activities offered at Neighborhood Networks centers. Instructors can keep an ongoing record in a central file, marking progress on each skill and using this tool to assess IT skills and knowledge developed by participants. A participant can present his or her IT Progress Chart to a prospective employer and discuss it at job interviews.

Issue 4: Creating Projects that Stimulate People to Move Beyond

When projects are connected to real needs and interests of participants, they increase motivation and engagement and give people a reason to learn.

Learning involving a specific project or problem gives participants more control over their own activities (choosing the project, resources and activities) and provides them with the opportunity to explore their interests, skills and abilities. Projects allow participants to build teamwork skills, connect their skills and interests to the needs of others in their communities and see the value of their contributions.

Putting the Concept to Work

In schools where project learning is gaining support, learners thrive in courses where concepts are aligned with their intended use.

Students learn more effectively and are more motivated when activities are directly related to the real world than when they are involved in traditional academic tasks. Projects also promote cooperative learning and team building. Participants use their skills in different ways as they take on different roles within the groups and explore new social relationships with peers.

By focusing on projects that have an objective, youth at Casa Familiar in San Diego have more choice and creative control. Their most successful project was the participant-led publication of an anthology of creative writing. Other projects include creating an online help desk for software users and the personal budget project in which youth assess the real costs of their lifestyle choices.

Shifting to portfolios was key to promoting project learning at the Urban League of Eastern Massachusetts. Portfolios contained certificates, diplomas, examples of work to demonstrate learners' skills development and knowledge acquisition. This motivated learners to produce real work products to include in their portfolios. Their first projects were scenarios and in-basket activities selected from textbooks. In-basket activities are simulations that place the learner in a situation where they take on the role of a worker and complete a real work activity. A word processing in-basket activity might look like this: "You are Alphonse from the ABD Corporation. One of your tasks today is to word process and send the following letter to customers. Copy the letter out of the book word process using Microsoft Word."

Now, youth meet the needs of real people and work on real projects. Learners work in teams, thereby learning and coaching each other. They learn to interact with the people for whom they are doing a real work task. Learners in the office skills class

transferred Urban League by-laws into electronic format; and in the public relations project, learners worked with the public relations officer to design and create a monthly newsletter that summarizes program highlights. The first newsletter created in the class became a template for subsequent issues.

In Massachusetts, Chelsea High School students developed marketable skills using GIS software on a project to help their city meet federal emergency preparedness guidelines. During the course of a year, students learned about using computers to map information using Windows 95 and ArcView 3.0; and they learned about regulations and safeguards governing hazardous materials from local businesses and government agencies.

Students canvassed the community for floor plans and Material Safety Data Sheets, evacuation routes and lists of contact people responsible for storing hazardous materials and other businesses and community organizations. They compiled data on what was stored at what sites, identified one- and two-way streets and plotted Chelsea's HAZMAT information. At the end of the project, students directed an emergency response to a simulated chemical plant release. Students using air-monitoring instruments borrowed from the Environmental Protection Agency and Computer Aided Management of Emergency Operations, a software package program run on laptops directed an evacuation of the area.

Appendix A

NWCET Information Technology Skill Standards
Learner Progress Chart (Sample)

NAME: _____ DATE: _____

PROGRAM: _____

LEARNER PROGRAM OUTCOMES Student ability to demonstrate:	Introduced	Practiced	Mastered
COMPUTER TRENDS IN BUSINESS AND SOCIETY ❑ How IT impacts the operation and management of business and society ❑ Past and current trends in computer technology			
DATABASE ❑ Ability to design, create, modify and use relations databases, including developing queries, forms and reports ❑ Ability to apply databases to actual situations and business problems			
E-MAIL ❑ Basic understanding of e-mail system components and organization ❑ Ability to use e-mail effectively and appropriately ❑ Ability to use basic e-mail functions and tools			
GRAPHICS SOFTWARE ❑ Knowledge of available graphics software applications ❑ Ability to apply basic principles of visual communication in transferring data into graphics form ❑ Ability to create simple graphics documents using drawing and painting software programs			
HARDWARE INSTALLATION/CONFIGURATION ❑ Knowledge of individual parts that make up a stand-alone PC computer system and the relationships between components ❑ Ability to install and configure hardware in a PC computer system ❑ Basic knowledge of PC hardware troubleshooting and maintenance.			
INTERNET ❑ Ability to use the Internet as a research tool in a highly efficient manner ❑ Ability to create and maintain Web pages			
NETWORK TECHNOLOGIES ❑ An understanding of overall design and components of a LAN and WAN system ❑ Ability to perform basic setup and configuration of network hardware and software ❑ Ability to monitor overall network operations, troubleshoot basic problems and implement administrative functions			
PC PRINCIPLES and OPERATIONS ❑ Knowledge and understanding of the primary PC components ❑ Ability to perform basic personal computer operations ❑			
PRESENTATION SOFTWARE ❑ Ability to use the components of presentation software creatively and effectively ❑ Proficiency in using presentation software functions			

Appendix B

Resources

Organizations

The Community Technology Centers' Network (CTCNet)
http://www.ctcnet.org

CTCNet is a network of more than 250 independent nonprofit community technology centers, mostly in low-income communities, where people can access computers and computer-related technology, such as the Internet. The sites are enormously diverse in program areas and participating populations. Some are stand-alone centers; others operate as part of a larger organization, such as a multiservice agency or museum, job training center, shelter or cable public access center. Most include programs where participants can learn important job skills either via formal training programs or through using the technology to accomplish projects, in a learning environment that encourages exploration and discovery. The CTCNet web site includes a Center Start Up Manual and research/evaluation studies examining the impacts of community technology centers on their participants and communities.

The Center for Education, Employment and Community at Education Development Center, Inc.
http://www.edc.org/CEEC/

Through capacity building and inclusive partnerships, the Center for Education, Employment and Community (CEEC) at EDC brings together people of diverse talents and backgrounds to create systems that help students learn to high standards, workers advance in their careers, and citizens improve their communities. Current projects focus on school-to-work and skill standards, information technology, integrating and assessing academic and technical learning, community technology, and equity. Guiding CEEC's work are the beliefs that technology can help people solve problems and answer questions that are important in their lives; that with clearly-defined standards, high-quality programs and high expectations, all learners can achieve; that equity works for all; and there is strength in diversity.

Information Technology Association of America Website: The Techforce Initiative
http://www.itaa.org

The Information Technology Association of America (ITAA), with more than 11,000 direct and affiliated member companies, represents the IT industry on issues such as intellectual property, taxation, privacy, telecommunications policy, e-Commerce, the Year 2000 Conversion (Y2K) challenge and workforce development. You will find information about these public policy and program areas on ITAA's web site. Information about ITAA's workforce development initiatives provided on-line includes the following: Help Wanted 1998, a detailed study of the IT worker shortage; ITAA Workforce and Education Committee task force reports; the High-tech Workforce Resource Center with links to industry-education partnerships and training programs; the National IT Workforce Convocation; PASS*IT*ON, a U.S. Department of Labor (DOL) grant with Community Options to expand IT training for people with disabilities; and the Techforce Initiative, a national IT-School-to-Work initiative funded by the DOL and administered by ITAA, the National Alliance of Business and the Education Development Center. For more information, visit ITTA's home page and click on "Workforce."

The Center on Education and Work
http://www.cew.wisc.edu

The Center on Education and Work, located at the University of Wisconsin-Madison, conducts research, development and capacity-building technical assistance designed to improve the connections for youth and adults between places of education and work. It is a unit of the School of Education concerned primarily with improving the linkages between

education and work to ensure that the nation's citizens engage in meaningful and productive careers conducted through collaborative interdisciplinary research and development programs. Focusing on the integration of Vocational and Technical Education, IVAE Connection is a free publication of the Center on Work and Education, Volume One, Number Two.

The Center for Occupational Research and Development.
http://www.cord.org

The Center for Occupational Research and Development (CORD) is a nonprofit public service organization that provides educational leadership in developing a more productive, competitive workforce. CORD is engaged in curriculum development for contextual learners, integrating instructional technology as an essential component. Through its teacher training workshops, CORD empowers educators to use teaching methods and technology that result in higher levels of student achievement.

The Institute on Education and the Economy.
http://www.tc.columbia.edu/~iee/

The Institute on Education and the Economy (IEE), established in 1986 by the board of trustees of Teachers College, Columbia University, is an interdisciplinary policy research center that focuses on the interaction between education and the economy. It facilitates communication between education and business in the belief that long-term solutions to human resource problems require collaboration. The institute helps businesses articulate workforce problems to educators and policy leaders and works with educators to involve employers in school-to-work transition and other educational programs.

California School-to-Work Interagency Transition Partnership
http://www.sna.com/switp

The California School-to-Work Interagency Transition Partnership (SWITP) is a statewide effort to coordinate and improve delivery systems that support students with disabilities in moving successfully from school to work and adult life. Eight state and one federal agency, along with a coalition of consumers and parents, have worked together for more than five years to improve the services delivery system through state and local partnerships.

Colorado Service Learning
http://www.csf.colorado.edu

"Service-learning means a method under which students learn and develop through thoughtfully-organized service that: is conducted in and meets the needs of a community and is coordinated with an institution of higher education, and with the community; helps foster civic responsibility; is integrated into and enhances the academic curriculum of the students enrolled; and includes structured time for students to reflect on the service experience."

National Center for Research on Vocational Education
http://www.ncrve.berkeley.edu

NCRVE is the nation's largest center engaged in research, development, dissemination and outreach in work-related education and is funded by the Office of Vocational and Adult Education of the U.S. Department of Education. Headquartered at the University of California, Berkeley since 1988, NCRVE has played a key role in developing a new concept of workforce development. Its mission is to strengthen school-based and work-based learning to prepare all individuals for lasting and rewarding employment, further education and lifelong learning.

Publications

A few publications on integrating academic and vocational education include:

Grubb's Case for Compromise: Can Education Through Occupations Be More?
D. D. Bragg

This article examines what Grubb's "education through occupations" means and argues that Grubb's apparent endorsement of traditional academics as the centerpiece for education neglects the rich history and particular strengths of vocational education. Bragg contends that, especially at the post-secondary

level where academic disciplines tend to be weak, traditional academics cannot lead the way to education through occupations. January 1998

New Designs for the Two-Year Institution of Higher Education
G. H. Copa, W. Ammentorp

Two-year institutions are at the center of change in higher education. This comprehensive report describes the design process and specifications for effective 21st century community colleges, technical institutes and private proprietary schools. The unique design process synthesizes a broad range of factors, from the goals, problems and expectations particular to each institution, to the physical structures, partnerships with the surrounding community, staff development, technology and finance. Illustrative new designs make the specifications real and concrete. Each aspect of the process can be used separately or with the others by two-year institutions designing or redesigning themselves for the 21st century. May 1998 Also online: Executive Summary | Related Readings

Building The Middle
S. E. Berryman, E. Flaxman, M. Inger

This paper is an interpretive synthesis of the research of NCRVE on a series of educational reforms related to the preparation of youth for post-secondary training and work, including cognitive apprenticeship, TechPrep, integrated vocational and academic education, vocational education as part of general education, career magnet schools, academies, work-based youth apprenticeship, cooperative education and school-based enterprise. Each of the reforms is assessed in terms of six educational objectives. The authors feel that the nation needs to objectively examine the various proposals for work preparation to build a powerful training system for students and not just a patchwork of different programs, none of which meets the criteria for positioning students for middle-skill jobs. June 1993

Websites

SCANS/2000 The Workforce Skills Website
http://infinia.wpmc.jhu.edu

Operated by the SCANS/2000 Center at Johns Hopkins University, this website provides information on projects, programs, publications related to school-to-work, welfare-to-work and education reform. The site provides information about research and current practice in using the competencies and foundation skills identified in the 1991 SCANS report.

School-to-Work National Gateway
http://www.ed.gov

On May 4, 1994, President Bill Clinton signed the School-to-Work Opportunities Act of 1994. This law provides seed money to states and local partnerships of business, labor, government, education and community organizations to develop school-to-work systems. This law does not create a new program. It allows states and their partners to bring together efforts at education reform, worker preparation and economic development to create a system to prepare youth for the high wage, high skill careers of a global economy. Using federal seed money, states and their partnerships design the school-to-work system that makes the most sense for them.

The Skill Standards Network
http://www.steps.atsi.edu

The Skill Standards Network is an online database of industry skill standards. Skill Standards projects are producing a variety of standards for a variety of occupations. As this database develops, it will begin to illustrate similarities between industries and occupations. It will allow individuals and managers to recognize the proficiency of skills through industry-specific performance criteria.

The National Alliance of Business
http://www/nab.com

The National Alliance of Business is at the forefront of local and national efforts to find innovative, long-term solutions to the challenge of improving workforce quality. They believe the key to maximizing corporate productivity and worker security is education and training. Now more than ever, education and training are vital in affording workers and employers the flexibility required in a fast-paced economy.

Building Linkages Projects (NSSB)

Project awardees:

Industry	*Contact*	*Name*
Health Care	Scott Hess, School-to-Work coordinator (801) 538-7850	Utah, State Office of Education (in conjunction with New Jersey)
Manufacturing	Peggy O'Malley, director of School-to-Work (317) 232-7670	Indiana, Department of Workforce Development
Business/Management	Camille Preus-Braly, director (503) 378-3921	Oregon Workforce Quality Council

National Skill Standards Projects

Industry	Contact	Name
Advanced Manufacturing	C.J.Shroll Sally O'Dowd (202) 662-8965	FIM 1331 Pennsylvania Avenue, NW Ste. 1081, North Tower Washington, DC 20004-1703
Agricultural Biotechnology	Bernard L. Staller (703) 360-3600	National FFA Foundation P.O. Box 15160 Alexandria, VA 22309-0160
Air-Conditioning, Heating and Refrigeration	Victor Harville (800) 248-7701	Southern Association of Colleges and Schools 1866 Southern Lane Decatur, GA 30033
Automobile, Autobody and Truck Technician	Patricia Lundquist (703) 713-0100	National Automotive Technicians Education Foundation 13505 Dulles Technology Drive Herndon, VA 22071-3415
Bioscience	Judith Leff (617) 969-7100	Education Development Center 55 Chapel Street Newton, MA 02160
Chemical Process	Kenneth Chapman (202) 872-8734	American Chemical Society 1155 16th Street, NW

Industry	Contact	Name
		Washington, DC 20036
Computer Aided Drafting and Design	John Morrison (202) 637-3426	FIM 1331 Pennsylvania Avenue, NW Ste. 1410, North Tower Washington, DC 20004-1703
Electrical Construction	Charles Kelly (301) 657-3110	National Electrical Contractors 3 Bethesda Metro Center, Ste. 1100 Bethesda, MD 20814-5372
Electronics	Irwin Kaplan (202) 955-5817	Electronics Industries Foundation 919 18th Street, NW Washington, DC 20006
Electronics (DOL)	Cheryl Fields Tyler (408) 987-4267	American Electronics Association 5201 Great American Pkwy Santa Clara, CA 95054
Grocery	Jim Williams (703) 437-5300	Grocers Research and Education Foundation 1825 Samuel Morse Drive Reston, VA 22090
Hazardous Materials Management	Jim Johnson (817) 772-8756	Center for Occupational R&D (CORD) 601 Lake Air Drive Waco, TX 76710
Health Care	Sri Ananda (415) 241-2725	Far West Lab for Educational R&D 730 Harrison Street San Francisco, CA 94107-1242
Heavy Highway/Utility Construction and Environmental Remediation and Demolition	John Tippie/ James Warren (203) 974-0800	Laborers-AGC Education & Training Fund 37 Deerfield Rd, Box 37 Pomfret Center, CT 06259
Hospitality and Tourism	Sonja James (202) 331-5990	Council on Hotel, Restaurant and Institutional Education 1200 17th Street, NW Washington, DC 20036-3097
Human Services	Virginia Mulkern Marianne Taylor (617) 876-0426	Human Services Research Institute 2336 Massachusetts Avenue Cambridge, MA 02140
Industrial Laundry	Geoffrey Northey (202) 296-6744	Uniform and Textile Service Assoc. 1730 M Street, NW, Ste. 610 Washington, DC 20036
Metal Working	William Ruxton (301) 248-6200	National Tool & Machining Assoc. 9300 Livingston Road Ft. Washington, MD 20744
Photonics	Darrell Hull (817) 772-8756	Center for Occupational R&D (CORD) 601 Lake Air Drive Waco, TX 76710
Printing	Jack Simich (412) 621-6941	Graphic Arts Technical Education 4615 Forbes Avenue Pittsburgh, PA 15213

Industry	Contact	Name
Retail Trade	Robert Hall (202)783-7971	National Retail Federation 325 7th Street, NW, Ste. 1000 Washington, DC 20000
Welding	Nelson Wall Charles Fassinger (305) 443-9353	American Welding Society 550 NW LeJeune Road Miami, FL 33126

ENDNOTES

[1] Information Technology Association of America and Virginia Technical University. 1998. "Help Wanted: A Call for Collaborative Action for the New Millenium."